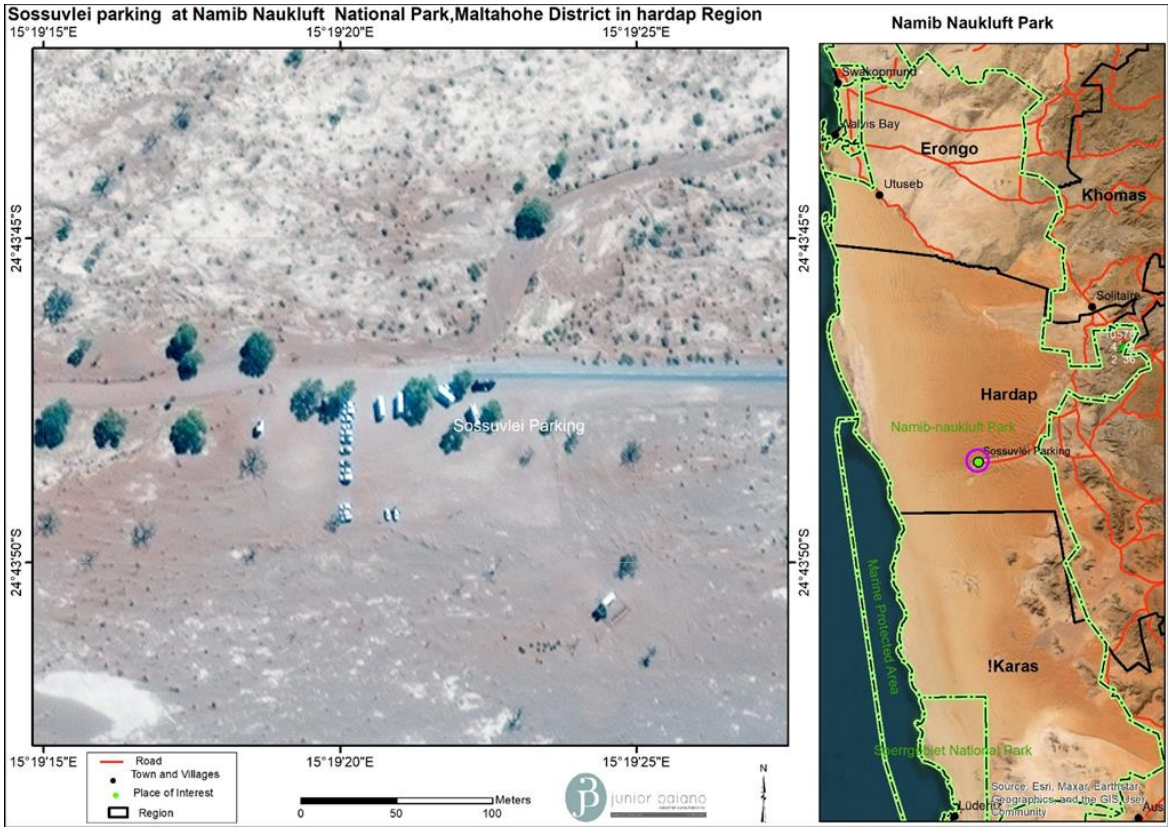
ENVIRONMENTAL IMPACT ASSESSMENT

FOR THE PROPOSED DEVELOPMENT AND OPERATION OF A SOSSUSVLEI SHUTTLE SERVICE WITHIN THE NAMIB NAUKLUFT NATIONAL PARK THE HARDAP REGION: NAMIBIA.



ENVIRONMENTAL SCOPING REPORT

FINAL

OCTOBER 2024

Prepared by: Junior Baiano Industrial Consultants cc
Postal Address: PO Box 23537, Windhoek
Contact Person: Fredrich Nghiyolwa
Contact number: +264 (61) 219 773
Cell: +264 (0) 81 1472029
Email: JuniorB200581@gmail.com

Prepared for: ABOUT ADELT SOSSUSVLEI CONCESSION MANAGEMENT (PTY) LTD
Postal Address: Po Box 173, Swakopmund
Contact Person: Heiko Dörgeloh
Contact number: +264 811273366
Email: heiko@aboutafrica.co

CONTENTS

List of Figures

List of Tables

Acronyms

TERMS	DEFINITION
BID	Background Information Document
CA	Competent Authorities
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
PPE	Personal Protective Equipment

EXECUTIVE SUMMARY

Junior Baiano Industrial Consultants (JBIC) cc has been appointed by **ABOUT ADELT SOSSUSVLEI CONCESSION MANAGEMENT (PTY) LTD** to conduct an Environmental Impact Assessment (EIA), develop an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate for the proposed development and operation of a Sossusvlei shuttle service within the Namib Naukluft Part National Park, Maltahohe district Hardap Region. A shuttle service is transport service operating to and from over a short route.

In terms of the Environmental Impact Assessment Regulations 2012, the proposed project triggered the application for an environmental clearance certificate because of the following activities:

Environmental Impacts

- Generation of waste during construction and operation.
- Impacts on vegetation and biodiversity through clearing of land during construction.
- Health and safety impacts during construction and operation.
- Surface and groundwater impacts during construction.

Social and Economic Impacts

- The project is generally expected to contribute to improving the livelihoods of the local community of Maltahohe District through employment opportunities and increased tourism services which will be available in the area.
- An EMP has been developed to mitigate any anticipated possible impacts of the project to the environment.

Public Participation Process

Interested and Affected Parties were notified of the project through site notices and newspaper adverts. All relevant information regarding consultation is covered in Chapter 4 of this document and attached in Appendix A.

Recommendation

Based on the Environmental Assessment it is concluded that most of the impacts identified can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the tower. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and duration. All developments could proceed provided that general mitigation measures as set out are implemented at a minimum.

In this respect it is recommended that the proposed project receives an Environmental Clearance Certificate, provided that the recommendations described in this report and the EMP are implemented.

1 CHAPTER ONE: BACKGROUND

1.1 INTRODUCTION

About Adelt Sossusvlei (PTY) Ltd intends to achieve the objective of improved the transport around the Namib Naukluft National Park (Namib Desert) and throughout the whole of Namibia, but not limited to destinations such as South Africa. About Adelt Sossusvlei (PTY) Ltd proposed to develop and operate of a Sossusvlei shuttle services within the Namib Naukluft Part National Park, Maltahohe district in the Hardap Region.

Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012) echoes the need of an Environmental Impact Assessment (EIA) for new projects (such as the proposed development) that are specified by the Act. The relevant listed activities as per EIA regulations are:

6. The construction of resorts, lodges, hotels or other tourism and hospitality facilities.

OTHER ACTIVITIES:

11.2 Construction of cemeteries, camping, leisure and recreation sites.

Non-compliance to legal obligations presents liabilities and it is in the wake of the need to attain sustainability that About Adelt Sossusvlei (PTY) Ltd has opted to undertake an EIA for its proposed development and operation of a Sossusvlei shuttle services within the Namib Naukluft National Park. EIA is required to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment and Tourism (MET) before the project can proceed. In this context the company has set out to conduct the Environmental Impact Assessment (EIA) for its upgrade activities. The EIA is the official appraisal process to identify, predict, evaluate and justify the ecological, social and related biophysical impacts of the project on both the environment and, affected and interested stakeholders. It provides insight on alternatives and measures to be adopted to prevent or mitigate any impacts/risks that may ensue from the project and its associated activities.

As per the requirements of the Environmental Management Act No. 7 of 2007, MTC has appointed JBIC to conduct the EIA and develop an Environmental Management Plan (EMP) for the proposed project. In this respect, this document forms part of the application to be

made to the DEA's office for an ECC for the proposed project, in accordance with the guidelines an statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012).

1.2 PROJECT LOCATION

About Adelt Sossusvlei (PTY) Ltd Company intends to operate Sossusvlei shuttle service concession located at farm Arbeit Adelt, within the Namibia Naukluft national park, Maltahohe district, Hardap Region Namibia. The figure below the locality map of the project area.

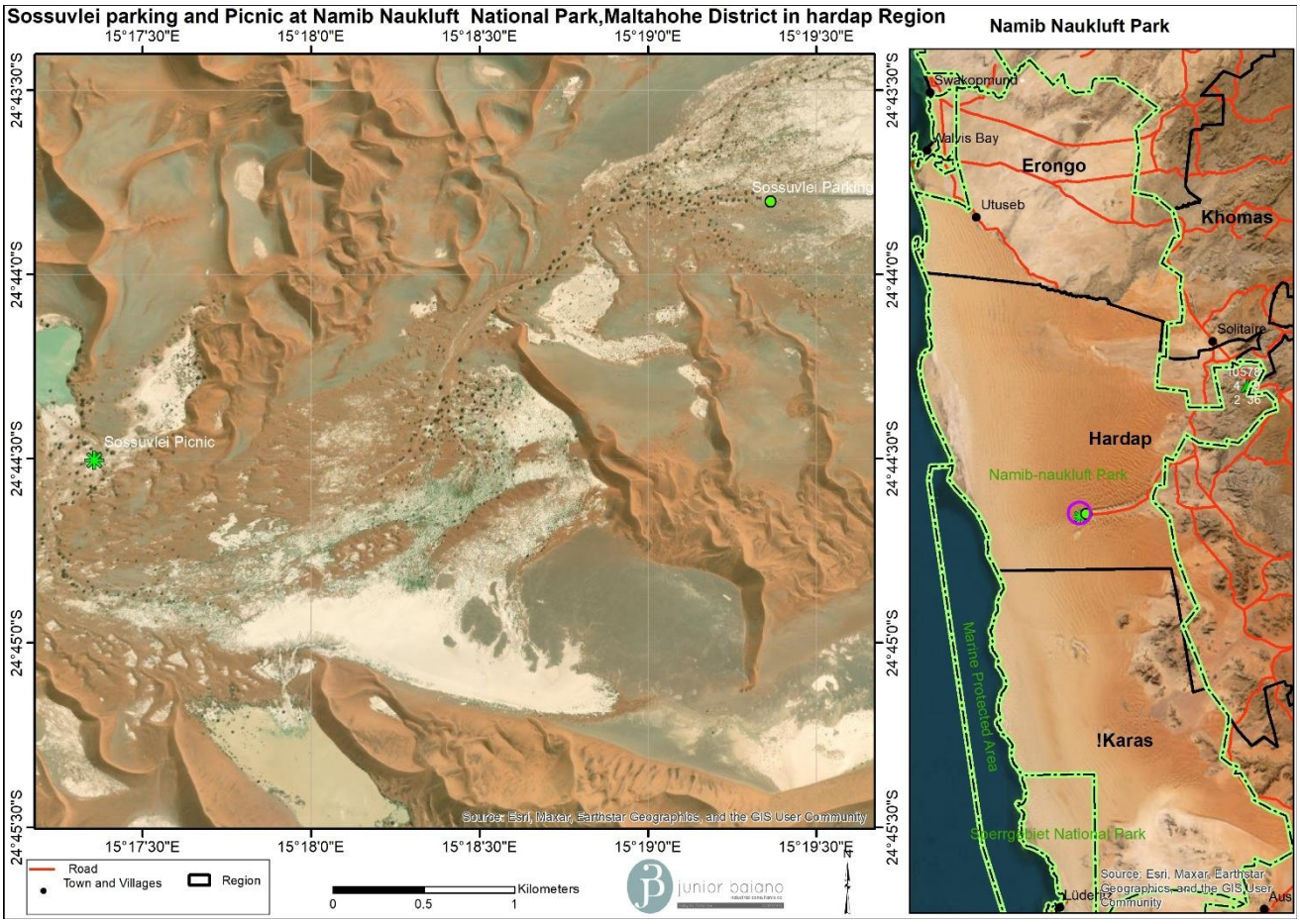


Figure 1: Site Locality for picknic setups

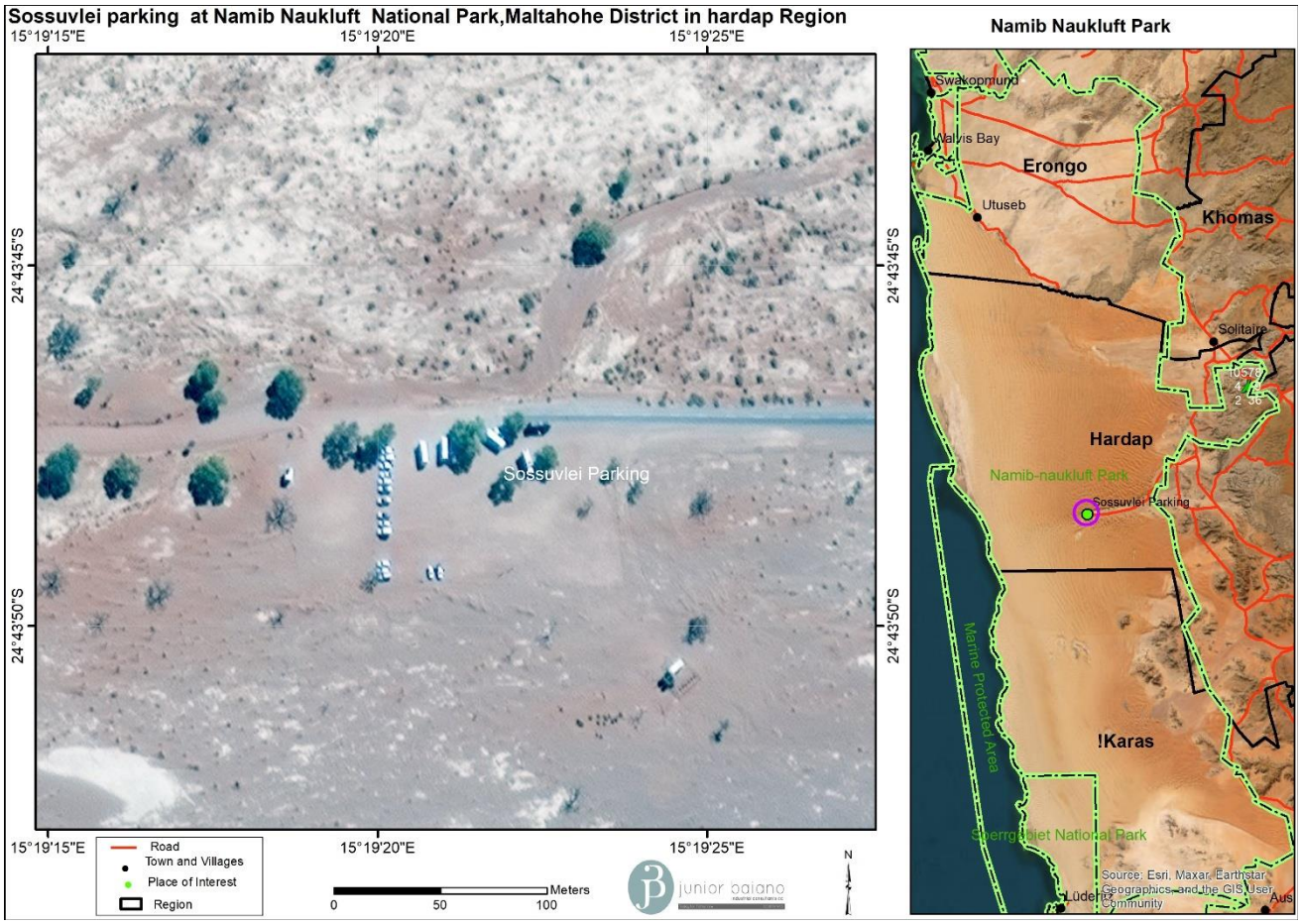


Figure 2 site locality map for the parking for the shuttle

1.3 PROJECT OVERVIEW

The Sossusvlei shuttle principal activity will be offering a shuttle service between Sossusvlei parking and Deadvlei trail. This service will be offered to reduce and minimize the number of vehicles that drive to the Deadvlei. The shuttle service will help MEFT better manage the track to the Deadvlei. We aim to achieve this rotating vehicle tracks and allowing certain parts to recover. For high end clients there will be an option for VIP transfers and picnics. On top of offering shuttle services, refreshments will be offered to guests who have finished climbing the dunes. This will be made available for purchase at the constructed kiosks. The project works involve the construction and operation of a campsite and a parking lot for the shuttle vehicles which includes:

- Planning and Design of Project Work – this compasses land acquisition and registration; preliminary site investigations e.g. geotechnical assessments and topographical surveys; permit applications; preparation of site plans/drawings and

application of the appropriate approvals from the relevant regulatory authorities; assessment of baseline conditions to determine supply and demand for required project services; carry out EIA and obtain the appropriate approvals; etc.

- Site Preparation – this entails grading, landscaping, building roads and siding of project areas in order to make the sites free of obstruction prior to construction. It may also involve utilization of heavy machinery/equipment to fully prepare the landscape. This includes physically removing vegetation, any pre-existing concrete foundations, etc. By doing this, the sites are prepared for new concrete foundations and other needed site work.
- Building and renovation of buildings already on site – The farmhouse will be renovated and it will contain a reception, curio shop and manager accommodation. The lounge and dining area will be tent structures with the kitchen and food storage. Support infrastructure will include a workshop, generator housing, battery and inverter room, gas storage and activity vehicle parking. The staff village will be located further away from the main complex.
- Construction Materials - Non-permanent structures will be constructed. Except the brown sites, that is the old farmhouse which will be renovated using bricks. We will use wooden decks. Poles and canvas material throughout the farm. The same applies at the kiosk where wood and poles will be used extensive.
- Electrical and Grounding - it is necessary to determine and install all necessary electrical and grounding materials needed to power the project areas.

1.4 ACCESSIBILITY

The sites are easily accessible from an existing access roads connecting to the farm areas and other parts of the project.

1.5 INFRASTRUCTURE AND SERVICES

- **Water Provision** – About 5 000 liter holding tanks and it will be about 6m high positioned near the tuckshop .This water will be source from the nearby borehole . Water will be tested bi-annually to certify if it is fit for human consumption every time the tank is being refilled.

- **Sewage:** Mobile chemical ablution facilities will be provided on-site. Sewage waste will be disposed of appropriately as per instructions of the facility manufacturer.
- **Solid waste:** Sufficient waste bins (containers) will be made available on sites and later disposal at the nearest approved waste facility.
- **Hazardous waste**: The waste fuel/oils will be carefully stored in a standardized container for disposal at an approved hazardous waste management facility in the nearest Town.
- **Health and Safety**: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to project personnel. A minimum of two first aid kits will be readily available onsite.
- **Potential Accidental Fire Outbreaks:** Fire extinguishers will be readily available in vehicles, at sites .

1.6 NEED AND DESIRABILITY

The Tourism sector is one of the largest economic contributors to the country's Gross Domestic Product (GDP), as it generates a substantial number of jobs and is a valuable foreign exchange earner for the economy. Tourism can create direct and indirect income and employment effects to the Maltahohe constituency and previously marginalized communities in the area, with the potential to aid with the poverty reduction targets. In addition, tourism forms the essence of some Namibia's development plans, namely: National Development Plan 5 (NDP5) and Harambee Prosperity Plan (HPP). These plans are benchmarks on the ideal of vision 2030.

The proposed project is a unique project in terms of its ownership, the proposed project will be owned on Broad Base Public Private Partnership (BBPPP) which is in line with the National Development Goals of the Country. The Harambee Prosperity Plan and National Development Plans set the goals, targets, and strategy for Namibia to move on a path to economic prosperity through a concerted strategy for the development of Namibia's economic growth. These Plans also include specific growth targets milestones and strategies for the sustainable deployment of Namibia's resources to achieve the stated economic and social development goals. Communication is one of the major targets aimed in the NDP5 and to stimulate development of any aspect, internet and voice connectivity is a pre-requisite.

This project, is a major step in addressing the objectives of the developmental plans and targets of the Namibian government.

1.7 PROJECT ALTERNATIVES

The project will not be implemented if the No-Go option is selected. The no-project alternative would mean that the various potential impacts/risks emanating from the proposed project would not be experienced. Thus, the current uses and value and other potential land uses of the site are likely to be retained.

In addition, there would no increased pressure on resources such as electricity and water which are already under strain. There also would be no increased chances of pollution and other potential negative impacts that would emanate from project activities.

If the project is implemented it is anticipated that the project will have the following benefits

- Creation of much needed employment opportunities
- Facilitation of local and national economic growth
- Worldwide access

These benefits will not be realised if the project does not take place. The environmental assessment for the proposed development has accommodated the ordeal which might occur into consideration. This includes the review of the likelihood of the construction activities. It should be noted that the best alternative option shall be identified to ensure the impacts on the environment and society are minimized. Furthermore, the supplemental construction activities may be considered as another alternative to cater for any impacts that are of serious concern.

Due to the project's numerous environmental and socio-economic benefits, and that the identified environmental impacts can be suitably mitigated it has been determined that the No Go option can be eliminated. Should the Competent Authorities (CA) refuse the authorisation of the proposed project, the 'No Go' option will be "implemented" and the status quo of the site will remain intact - leaving the site in its present state.

Table 1-1: Other Alternative Considerations

Item	Description	Alternatives	Comments
1.	Transportation	• Road • Rail • Aircraft • Water (Atlantic ocean)	Given the location of the project water, road is the most cost-effective means of transport.

Item	Description	Alternatives	Comments
2.	Water and Sanitation	• Drilling a Borehole on site • Septic tank	Considering that the site very far away from domestic water and sewer reticulation systems drilling of a borehole and establishment of a septic tank or latrines at the project site.
3.	Energy	• Electricity • Solar	• Equip masts with solar panels to generate renewable energy for powering equipment. • Excess energy generated can be fed back into the grid or stored in batteries. • Use energy-efficient equipment to reduce power consumption and the need for continuous energy supply. • LED lighting and efficient cooling systems can contribute to energy savings.

1.7.1 Conclusion

It is recommended that the project goes ahead, with the development and operation of a Sossusvlei shuttle service as a viable option as it is a cost effective and sustainable land use option.

2 CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 INTRODUCTION

This EIA Report for the mast has been prepared in reference to identified Namibian laws and regulations that impinge on the project throughout all its phases. Legislation is one of the most important instruments of government that ensures the following:

- Acceptable pollution control and waste management
- Conservation and utilisation of resources
- Sustainable land-use planning and regulation
- Safe and healthy workplace environments
- Determination amongst others things of the rights and responsibilities of individuals and authorities to whom the legislation applies.

The international and national laws, agreements and treaties that govern the social and environmental issues of the project are outlined in the following sub-section. The sub-section take into account brief summarises of selected legislation; it does not seek to provide comprehensive details of all legal obligations that apply to the project but rather an overview.

2.2 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project.

Table 2-1: Legal Compliance

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	• Article 16(1) guarantees all persons the right to property. It therefore provides everyone a right to acquire, own and dispose of property, alone or in association with others and to bequeath such property. • Article 95(l) "The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes and the biological diversity of Namibia. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future."	• The project will enable the full execution of right to practice any profession, or carry on any occupation, trade or business by availing necessary provisions such as practising any profession, or carry on any occupation, trade or business in the country. • Through implementation of the environmental management plan, the proponent will ensure conformity to the constitution in terms of environmental management and sustainability.
Biodiversity Conservation	Convention on Biological Diversity (CBD)	Namibia is a signatory of the Convention on Biological Diversity and thus is obliged to conserve its biodiversity.	The project will preserve tree species on as part of their plans for greed and sustainable development.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
Environmental protection	United Nations Convection to combat Desertification	Namibia is bound to prevent excessive land degradation that may threaten livelihoods.	It will be the responsibility of the proponent to conserve vegetation on and around the area, to avoid encroachment of the desert environs in the area.
National Development Plans	NDPs	Namibia's overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP's) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation.	The proposed project will propel NDP4 targets in tourism, logistics, and commodities market. Adding on, this will create employment which will work towards the NDP and Vision 2030.
	Namibia Tourism Board Act (No. 21 of 2000)	The core objective of this act is to establish the Namibia Tourism Board and to provide for its functions, to provide for the registration and grading of accommodation establishments, to provide for the declaration of any sector of the tourism industry as a regulated sector and for the registration of business falling within a regulated sector; and to provide for matters incidental thereto.	

Aspect	Legislation	Relevant Provisions	Relevance to the Project
Archaeology	National Heritage Act 27 of 2004	Section 48(1) states that "A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object"	Any heritage resources discovered would require a permit from the NHC for relocation.
	National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	• "No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: • Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or any other archaeological or palaeontological finds	The proposed site of development is not within any known monument sites, both movable and immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission.
Environmental	Environmental Management Act 7 of 2007	• Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). • Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)). • According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment and Tourism or in a manner prescribed by the Minister.	This Act and its regulations should inform and guide this EIA process.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		• Details principles which are to guide all EIAs	
	EIA Regulations GN 57/2007 (GG 3812)	• Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). • Details the requirements for what should be included in a Scoping Report (GN No 30 S8) and EIA report (GN No 30 S15).	This Act and its regulations should inform and guide this EIA process.
	Pollution and Waste Management Bill (draft)	• This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. • The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable.	The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste during construction or operation.
	Soil Conservation Act 76 of 1969	This act makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia.	The Project impact on soil will rather be localised, however the Act should provide for guidelines of operation during construction to prevent soil erosion and contamination during operation.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	National Biodiversity Strategy and Action Plan (NBSAP2)	The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and long term, and will propose methods and ways to sustain the local biodiversity.
	Hazardous Substances Ordinance 14 of 1974 Regulations Made In Terms Of Hazardous Substances Ordinance 14 of 1974 sections 3 and 27	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	The proponent will have to conform to this Act and its regulations through application for relevant licences with the relevant bodies highlighted thereto
Forestry	Forest Act 12 of 2001	• Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1) • Provision for the protection of various plant species.	• Land clearing of an extensive piece of land will be done upon approval from the Directorate of Forestry. • A plan will be put in place preserve trees and other species where possible.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
			Indiscriminate cutting down of trees is to be avoided. • If there is any protected species that need to be removed within the proposed site , a harvest permit needs to obtained from the Directorate of Forestry.
Water	Water Act 54 of 1956	• The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: • A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. • Prohibits the pollution of underground and surface water bodies (S23(1). • Liability of clean-up costs after closure/ abandonment of an activity (S23(2)). • Protection from surface and underground water pollution	The protection of ground and surface water resources should guide development's layout plans.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and	• 135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the structure of such buildings of otherwise to prevent or	The proponent will employ several people and shall ensure securing a safe environment and preserving the health and welfare of employees at work. This will include applying appropriate hazard

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	Safety of Employees at work'.	extinguish fires, and to ensure the safety in the event of fire, of persons in such building;" (Ministry of Labour and Social Welfare). • This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.	management plans and enforcing Occupational Health and Safety (OHS) enforcement by contractors.
	Public Health and Environmental Act, 2015	• Under this act, in section 119: "No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The operation will ensure compliance to the terms of the Act.
Services and Infrastructure	Communications Act, 2009 (Act No. 8 of 2009)	(10) The Authority may impose specific obligations and requirements on a licensee regarding to masts, towers or other facilities including requirements relating to the environmental or aesthetic impact of such facilities;	As a pre requisite, telecommunication masts would require environmental clearance certificates and, in this respect, the proponent is authorised this through this EIA to obtain such.
	Communication Bill 2009	Provide for the regulation of telecommunication activities. The bill provides licencing and enforcement of conditions, and the approval or equipment and technical standards to ensure public health and safety.	As per relevant spectrum, network equipment should be as per licenses.
	Road Ordinance 1972	• Width of proclaimed roads and road reserve boundaries (S3.1)	Although the project is a major boost for the town, the commodities market and the

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	(Ordinance 17 0f 1972)	• Control of traffic during construction activities on trunk and main roads (S27.1) • Infringements and obstructions on and interference with proclaimed roads. (S37.1) • Distance from proclaimed roads at which fences are erected (S38)	national highways the proponent needs to ensure that the development do not affect the major roads within their vicinity during construction and operation phases.
	Electricity Act 4 of 2007	• Requires that any generation and or distribution complies with laws relating to health, safety and environmental standards (s 18(4)(b) • In the event that exemption from acquiring a license is granted, the Minister may impose conditions relating to public health safety or the protection of the environment.	Obliges the proponent to comply with all relevant provisions of the EMA and its regulations when installing electrical connections to the tower.

3 CHAPTER THREE: RECEIVING ENVIRONMENT

3.1 SOCIO-ECONOMIC

The project is located in the Maltahohe District, in Daweb Constituency in the Hardap region (see Figure below). Maltahöhe is a village in south-central Namibia, about 110 km west of Mariental in the Hardap Region. Maltahöhe is governed by a village council. Maltahöhe has a population of about 6,000 inhabitants and an area size of about 17,000 hectares of land. Maltahöhe used to have town status Until after the year 2000. Due to mismanagement and infighting between councilors, Maltahöhe was downgraded to "village". Since then, many businesses have left, and unemployment has risen. Only about 500 of the approximate 6000 total inhabitants of Maltahöhe are thought to be actively employed. Tourism activities are among the sources of employment for the residents. Most of the men and women in the Maltahöhe community are historically underprivileged.

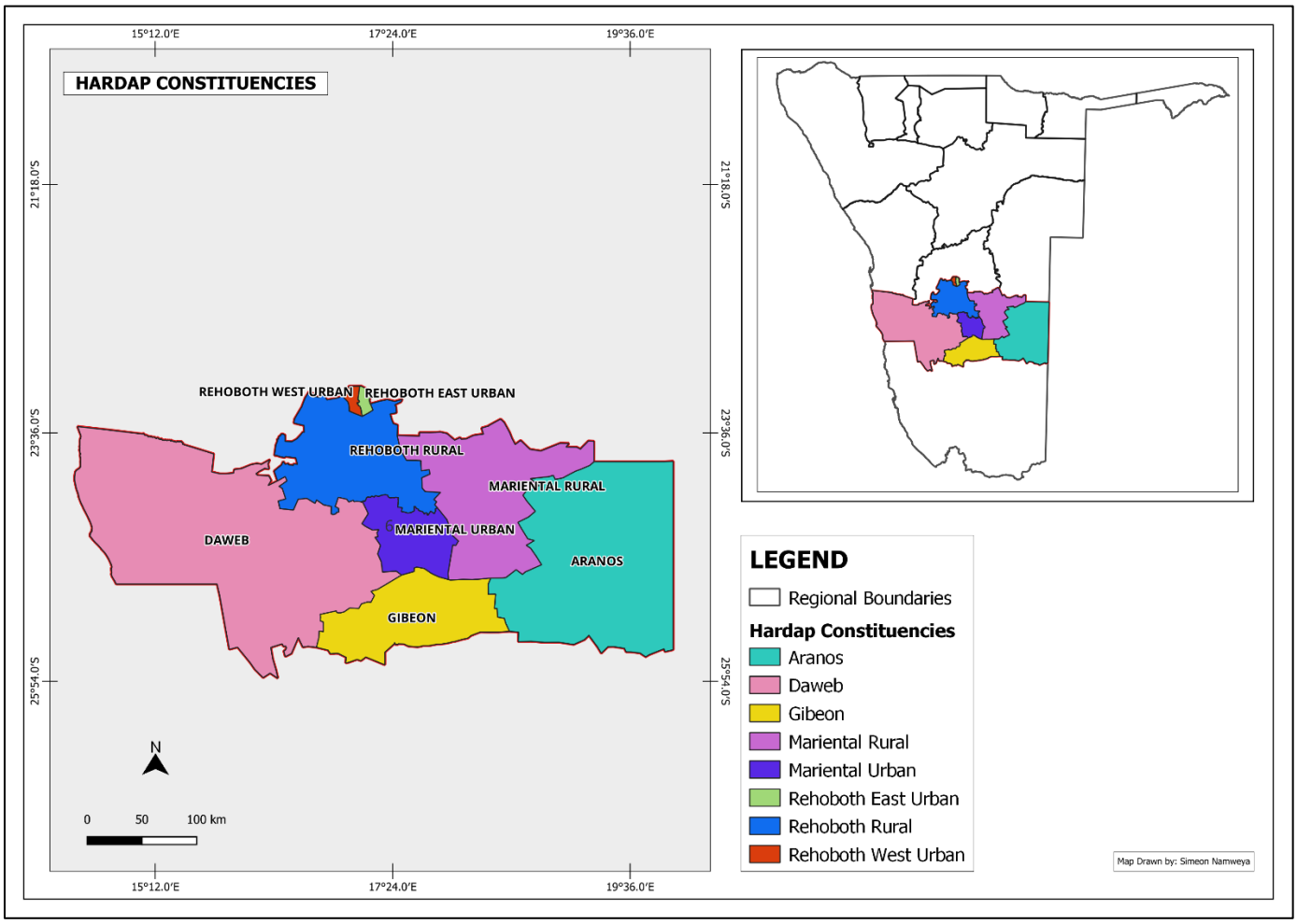


Figure 3: Hardap Region

3.1.1 Socio-economic environment

Farming: Maltahöhe area is characterized by livestock farming on commercial farms and in the communal farmlands (resettlement farms). However, the Maltahöhe area relies on rainfall, which is less than 100 mm on average per year. Maltahöhe town once served as a hub for karakul sheep farming, but full-scale farming has been losing ground. The Hardap Region is characterized by livestock farming such as goats, sheep, and cattle on commercial farms and communal farms.

Services and Infrastructure: Woermann Brock is the main retail establishment in the Maltahöhe community. One service station can be found in Maltahöhe. There is only an elementary school and the Daweb Junior Senior School and there is no senior school. Windhoek Hosea Kutako International Airport (WDH), located 266.69 kilometers away, is the closest airport to Maltahöhe. Maltahöhe is the closest 'community' or village to the Wolwedans Collection in the heart of NamibRand Nature Reserve, situated 180 km from Maltahöhe.

Employment Opportunities: Employment opportunities in the district are often linked to the mining sector, agriculture, small businesses, and tourism-related activities. Seasonal fluctuations in economic activities can impact employment stability.

Extrapolating from the national unemployment statistics, the constituency has high unemployment rate especially the youth (Namibia Central Bureau of Statistics, 2019). This shown in the figure below.

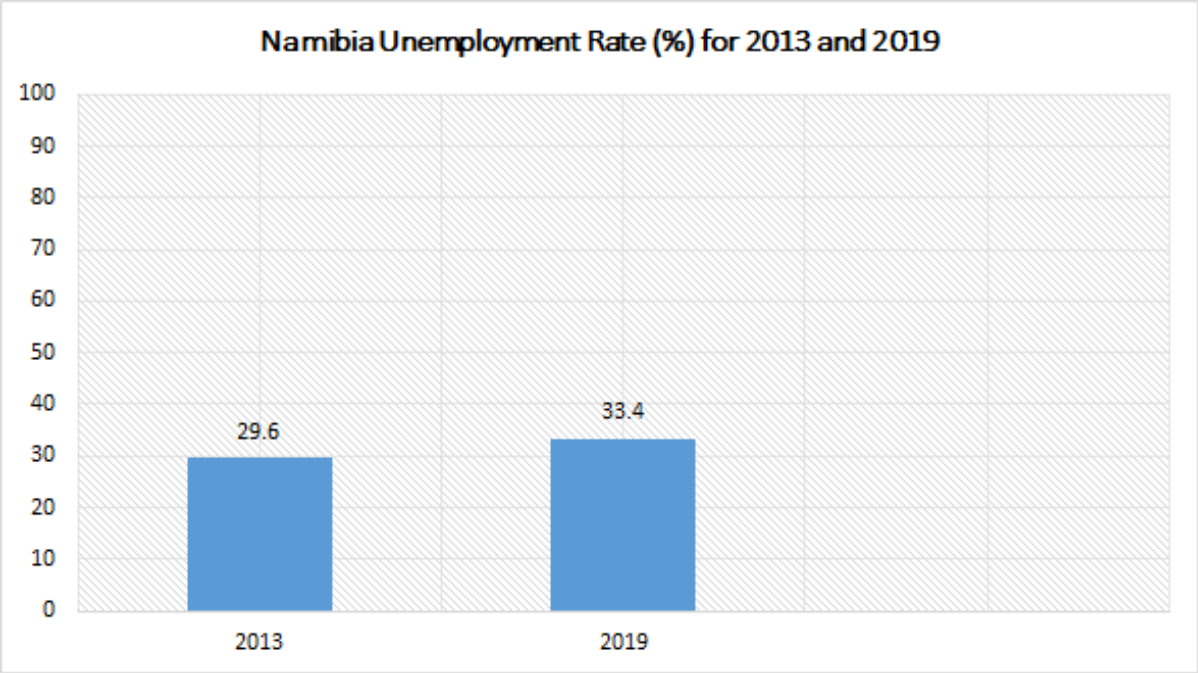


Figure 4: Namibia Unemployment Rate and Youth Unemployment Rate

The project will support the district's need for employment as well as the expansion of the local economy. Numerous employment opportunities are to be created for work personnel throughout the project phases. In addition, other forms of employment are likely to result from spillover effects, through indirect services.

Education and Healthcare: Access to education and healthcare services can be challenging in some areas due to geographical distances and infrastructure limitations. Schools and healthcare facilities may be concentrated in urban centers.

Water Availability: Water scarcity is a significant socio-economic challenge in the district, affecting both households and agricultural activities. Water sources may be limited, and communities often rely on careful water management practices.

Community Livelihoods: Many communities in the Maltahohe District rely on subsistence farming, livestock herding, and informal trade for their livelihoods. Traditional knowledge and skills play a role in sustainable resource use and cultural preservation.

Challenges and Opportunities: The arid climate poses challenges for agriculture, and economic diversification efforts may be important for long-term sustainability. Infrastructure development, including road connectivity and access to basic services, can improve the quality of life for local residents.

Conservation and Cultural Heritage: Conservation efforts, such as sustainable land use and wildlife management, may contribute to both ecological health and tourism. Preserving cultural heritage, including indigenous practices and traditional knowledge, can contribute to community resilience and identity.

Archaeological sites in Namibia are protected under the National Heritage Act of 2004 (No. 27 of 2004). Evidence shows that the emergence of modern humans and their ancestors have lived in Namibia for more than one million years, and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch (Kinahan, 2017). Namibia has a relatively complete sequence covering the mid-Pleistocene to the Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment, and the Namib Desert.

The Hardap is not well explored archaeologically. Early investigations by MacCalman (1972) and MacCalman and Grobbelaar (1965) drew attention to the presence of late Pleistocene evidence from the area, and more spectacularly, observations on stone tool use by contemporary hunter and gatherer groups. More recent investigations have documented a late Holocene occupation sequence (Albrecht et al 2001) and some of the detailed archaeological characteristics of nomadic pastoral settlement patterns in the area (Kinahan 2001). The area is also considered to have a high cultural heritage sensitivity due to the possible impact of various development initiatives on the traditional life and historical sites of the people (Kinahan 2013).

Therefore, it is highly recommended that the National Heritage act, 27 of 2004 should be adhered to on-site, and a qualified archaeologist should always be on standby/call during the setting up of the site to ensure that no archaeological resources that may be discovered on site are affected/ damaged.

3.2 CLIMATE

Maltahöhe is a village in the Hardap Region of Namibia. The climate in Maltahöhe is classified as a semi-arid climate. Here are some key characteristics of its climate:

Temperature: The area experiences hot summers and mild winters. Summer temperatures can often exceed 30°C , while winter temperatures can drop to around 5°C at night but typically remain mild during the day.

Rainfall: Maltahöhe receives relatively low annual rainfall, averaging around 200-300 mm (7.9-11.8 inches) per year. Most of the rainfall occurs during the summer months, particularly from November to April. The rainfall is often erratic and can come in the form of heavy downpours.

Dry Season: The region experiences a prolonged dry season, typically from May to October, where very little to no rainfall occurs. This period is characterized by dry and sunny weather.

Humidity: The humidity levels are generally low throughout the year, contributing to the dry conditions of the region.

Wind: The area can experience strong winds, particularly during the transition periods between the wet and dry seasons.

The semi-arid climate of Maltahöhe makes it a challenging environment for agriculture without irrigation, but it is well-suited for livestock farming, which is a common economic activity in the region.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	25.7 °C (78.3) °F	24.9 °C (76.8) °F	23.6 °C (74.5) °F	20.4 °C (68.7) °F	17.2 °C (62.9) °F	13.3 °C (55.9) °F	12.9 °C (55.2) °F	15.1 °C (59.1) °F	19.1 °C (66.4) °F	22.5 °C (72.5) °F	24 °C (75.2) °F	25.6 °C (78.1) °F
Min. Temperature °C (°F)	18.9 °C (66.1) °F	18.6 °C (65.5) °F	17.1 °C (62.7) °F	13.6 °C (56.5) °F	9.9 °C (49.8) °F	5.8 °C (42.5) °F	5.3 °C (41.6) °F	6.6 °C (43.9) °F	10.1 °C (50.3) °F	13.9 °C (57) °F	15.6 °C (60.1) °F	17.8 °C (64.1) °F
Max. Temperature °C (°F)	32.2 °C (90) °F	31 °C (87.9) °F	29.8 °C (85.6) °F	27 °C (80.6) °F	24.5 °C (76) °F	21 °C (69.7) °F	20.6 °C (69.1) °F	23.6 °C (74.4) °F	27.6 °C (81.7) °F	30.5 °C (86.9) °F	31.7 °C (89.1) °F	33 °C (91.3) °F
Precipitation / Rainfall mm (in)	48 (1)	61 (2)	34 (1)	15 (0)	3 (0)	1 (0)	1 (0)	0 (0)	3 (0)	5 (0)	9 (0)	18 (0)
Humidity(%)	31%	36%	35%	36%	30%	31%	29%	22%	17%	18%	19%	22%
Rainy days (d)	5	6	4	2	1	0	0	0	0	1	2	3
avg. Sun hours (hours)	11.7	10.9	10.5	10.0	9.7	9.4	9.6	10.0	10.7	11.3	11.9	12.2

Figure 5: Shows the climate condition around the projects area, Maltahohe district.

(source: climate: Climate-Data.org)

3.3 BIODIVERSITY

The biodiversity of the Maltahohe District is influenced by its unique geographical and ecological features. The district, located in Namib Desert, showcases a range of flora and fauna adapted to the arid and semi-arid environment. Here are some key points regarding biodiversity in the Maltahohe District:

Flora Diversity: In general vegetation in Namibia is strongly influenced by rainfall. The plant diversity and tallest trees are most lush in the north-eastern parts of the country and contrast sparser and shorter to the west and south of the country. This gradient is not simple as factors such as soil types, landscape and human impacts may also influence the vegetation. The plant diversity (150 to 300 species) for this area is medium, with low to moderate endemism (2 to 25 species) and the dominant vegetation structure around farm Albert is sparse shrubland, the vegetation type is dwarf shrub savanna and falls within the Nama-Karoo biome (Mendelsohn et al. 2002).

On site, there are few plant species that are occurring and the they are given their conservation status either protected under national legislation, endemic, near-endemic or listed in the CITES appendices:

Aloe littoralis (Nature Conservation Ordinance and CITES II),

dichotoma (Nature Conservation Ordinance, near-endemic and CITES II),

Obetia carruthersiana (near-endemic),

Commiphora saxicola (endemic),

Commiphora virgata (endemic),

Euphorbia guerichiana (CITES II),

Euphorbia avasmontana (CITES II),

Euphorbia virosa (CITES II),

Ziziphus mucronata (Forestry protected),

Bainesii usneoides (Nature Conservation Ordinance and endemic), and (Forestry protected) as stated by MEFT, (Mannheimer & Curtis, 2009

Fauna Diversity: Relatively few animal organisms were observed, because of the inherently low population levels for all animals in the Namib Desert. What could not be directly observed was therefore extrapolated from literature (studies from the past).

Accordint to MEFT, large animal species such as Oryx, Hartmann zebra, Giraffe, Springbok, Brown hyaena, Leopard, Baboon are said to be within the site. The 348 bird species

recorded include Lappet-faced Vulture, Ludwig's Bustard, Rüppell's Korhaan, Dune Lark, Herero Chat and African Black Oystercatcher. During the site visit none of the large animal was spotted but dropping of springbok and oryx were spotted during the site visit.

The overall terrestrial diversity for the area is low compared to other parts of the country. The area within and surrounding the project has a moderate bird diversity status of between about 141 and 170 species, with moderate to high bird endemism (6 to 7 species) and represents an area with moderate mammal diversity of between 61 to 75 (9 to 10 of these species are endemic).

Three to four large carnivore species have been recorded in the project area (Bubenzer, 2002, IUCN, 2021, Mendelsohn et al., 2002, Oberprieler and Cillié, 2008 & Stuart and Stuart, 2015). Furthermore, the reptile diversity within this area is moderate with between 51 and 60 species, 13-20 endemic species; the number of observed lizard species for this area is between 28 to 35 of which 9 to 11 species are endemic and the different snakes recorded are between 20 to 24 species (7 to 8 endemic species). This area also has a low frog diversity of between 4 and 7 species, and also a low to moderate scorpion diversity (12 to 15 species). (Bubenzer, 2002 & Mendelsohn et al., 2002).

Most bird species in Namibia fall under Schedule 4: Protected Game within the Namibian Conservation Ordinance No. 4 of 1975, except for the following excluded species: Weavers, Sparrows, Mousebirds, Redheaded Quela, Bulbul, and Pied crow as well as 19 huntable game bird species identified in Schedule 6 of the Nature Conservation Ordinance (Nature Conservation Ordinance No. 4 of 1975). A large number of bird species are highly migratory and pass-through Namibia sporadically, thus some of the species might be very rare to identify during the year, nonetheless could potentially be spotted within the project boundaries periodically. Water on-site during the rainy season might attract various water birds (either resident or migratory). In this part of Namibia, various bird species are either additionally protected under the regulations of the Exploitation of Marine Resources Act No. 241 of 2001, section 18 or listed within the CITES appendices. Some of these species might potentially be found or encountered near or within the project area boundaries during a given year (depending on the season and migratory patterns).

Various protected or threatened mammal species may occur on the project site of which one is classified as near threatened (Brown Hyena) and two are classified as vulnerable (Cheetah, Leopard) according to the IUCN red list of threatened species. Furthermore, all

tortoise species, rock monitors and pythons (dwarf and rock pythons) that might potentially be encountered within the project boundaries are protected under the Nature Conservation Ordinance No. 4 of 1975.

Animals unlike plants can migrate and relocate to safer locations when their safety is endangered. The level of mining and exploration activities that were undertaken in the past had resulted in the animals relocated to safety. Once the activities ceased, the animals were then able to re-establish in the area. An evident example is the nests by birds of prey that were observed in the crevices of the trenches left from mining activities.

The biodiversity of the Maltahohe District reflects the adaptation of species to the semi-arid and arid environment and contributes to the ecological health and resilience of the region. Recognizing the value of biodiversity and implementing conservation measures are essential to ensure the long-term survival of species and the maintenance of ecosystem services.

3.4 GEOLOGY, SOIL, AND HYDROLOGY

3.4.1 Geology of Maltahohe District

The geology of the Maltahöhe area in Namibia is characterized by a diverse array of geological formations and features. Here are the key aspects of the region's geology:

Precambrian Basement: The foundation of the geology in the Maltahöhe area consists of Precambrian basement rocks. These rocks are part of the Namaqua Metamorphic Complex, which includes high-grade metamorphic rocks such as gneisses and schists. These ancient rocks date back more than 2 billion years.

Damara Sequence: Overlying the Precambrian basement are sedimentary and volcanic rocks of the Damara Sequence. The Damara Orogeny, a major geological event that occurred around 550-500 million years ago, played a crucial role in shaping the geology of this area. The sequence includes a variety of rock types such as marbles, quartzites, and schists.

Karoo Supergroup: In some parts of the Maltahöhe area, the Karoo Supergroup is present. These rocks were deposited during the Late Paleozoic to Early Mesozoic eras (about 300 to 180 million years ago) and include sedimentary rocks like sandstones, shales, and

mudstones. The Karoo Supergroup is also known for its coal deposits in other regions of Namibia.

Igneous Intrusions: The region has experienced igneous activity, leading to the intrusion of dolerite dykes and sills. These igneous rocks are younger than the surrounding sedimentary and metamorphic rocks and are typically associated with the breakup of the supercontinent Gondwana.

Cenozoic Deposits: More recent geological formations in the area include Cenozoic deposits. These are primarily unconsolidated sediments such as alluvial sands, gravels, and calcretes, which have been deposited over the last few million years.

Geomorphology: The landscape of Maltahöhe is characterized by arid to semi-arid landforms, including rocky outcrops, sandy plains, and ephemeral riverbeds. The region's geomorphology has been significantly influenced by tectonic uplift, weathering, and erosion processes. **Figure 8** below shows the general geology map for the project.

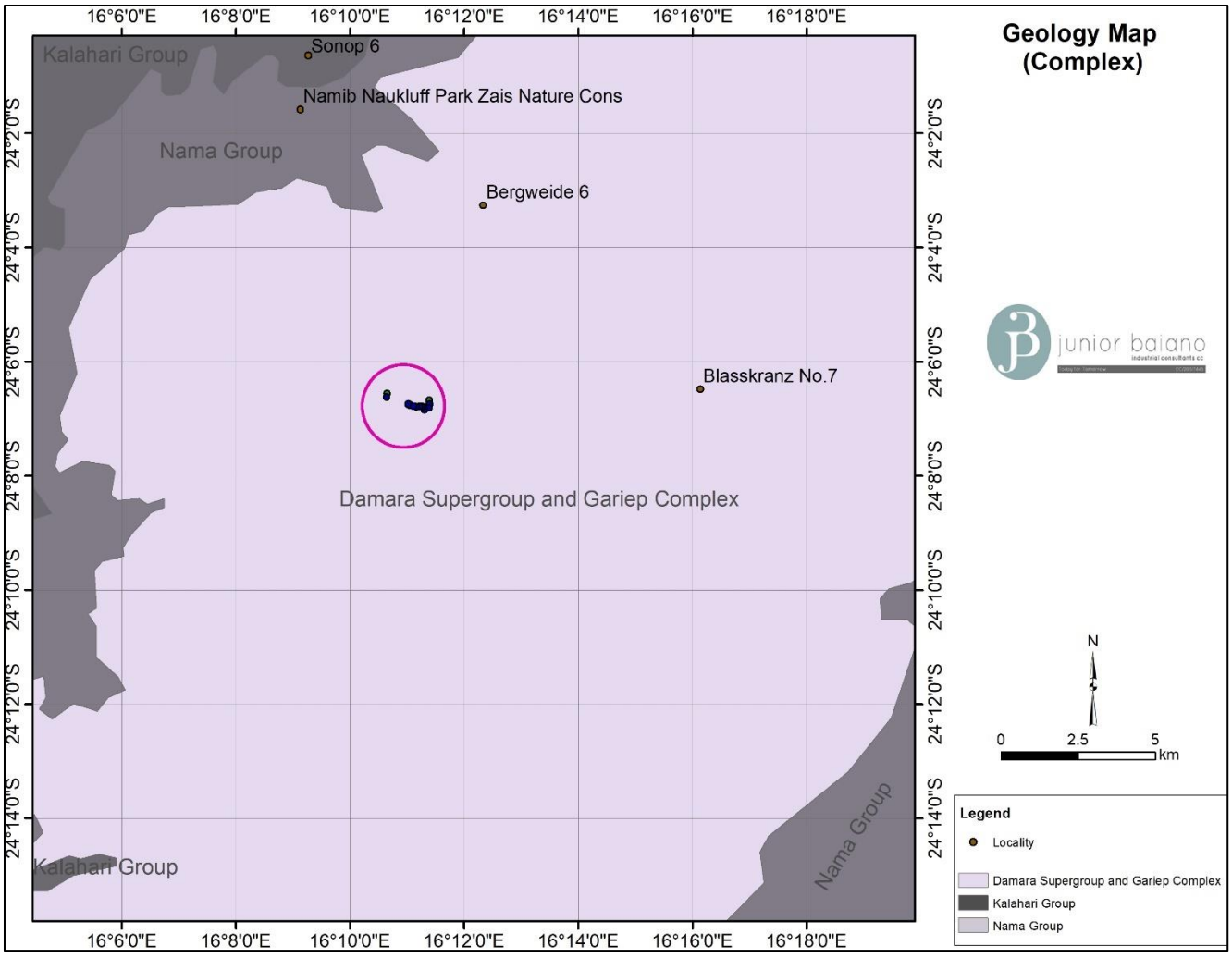


Figure 6: A map of the general geology of the project area

3.4.2 Soil Type of the Project

The Maltahöhe area is located in southern Namibia, characterized by arid and semi-arid conditions. The soil types in this region vary, but they are generally influenced by the local climate, geology, and topography. Here are some key characteristics of the soils found in the Maltahöhe area:

Sandy Soils: Much of the region has sandy soils, particularly in areas with higher wind activity. These soils are typically well-drained but have low fertility due to limited organic matter.

Loamy Soils: In some parts, especially where there is more vegetation or in low-lying areas, you can find loamy soils. These soils have a mix of sand, silt, and clay, providing better nutrient retention and structure for plant growth.

Clay Soils: There are pockets of clay soils, especially in areas where water accumulates. These soils can retain moisture better than sandy soils but may also become hard and compacted when dry.

Saline Soils: Due to the arid conditions, some soils in the Maltahöhe area can be saline. This is often a result of high evaporation rates, which leave salts behind on the soil surface.

Rocky Soils: The region also has rocky and gravelly soils, particularly in hilly or mountainous areas. These soils have limited agricultural potential due to their stony nature and poor water-holding capacity. **Figure 9** below shows the soil types found within the project area.

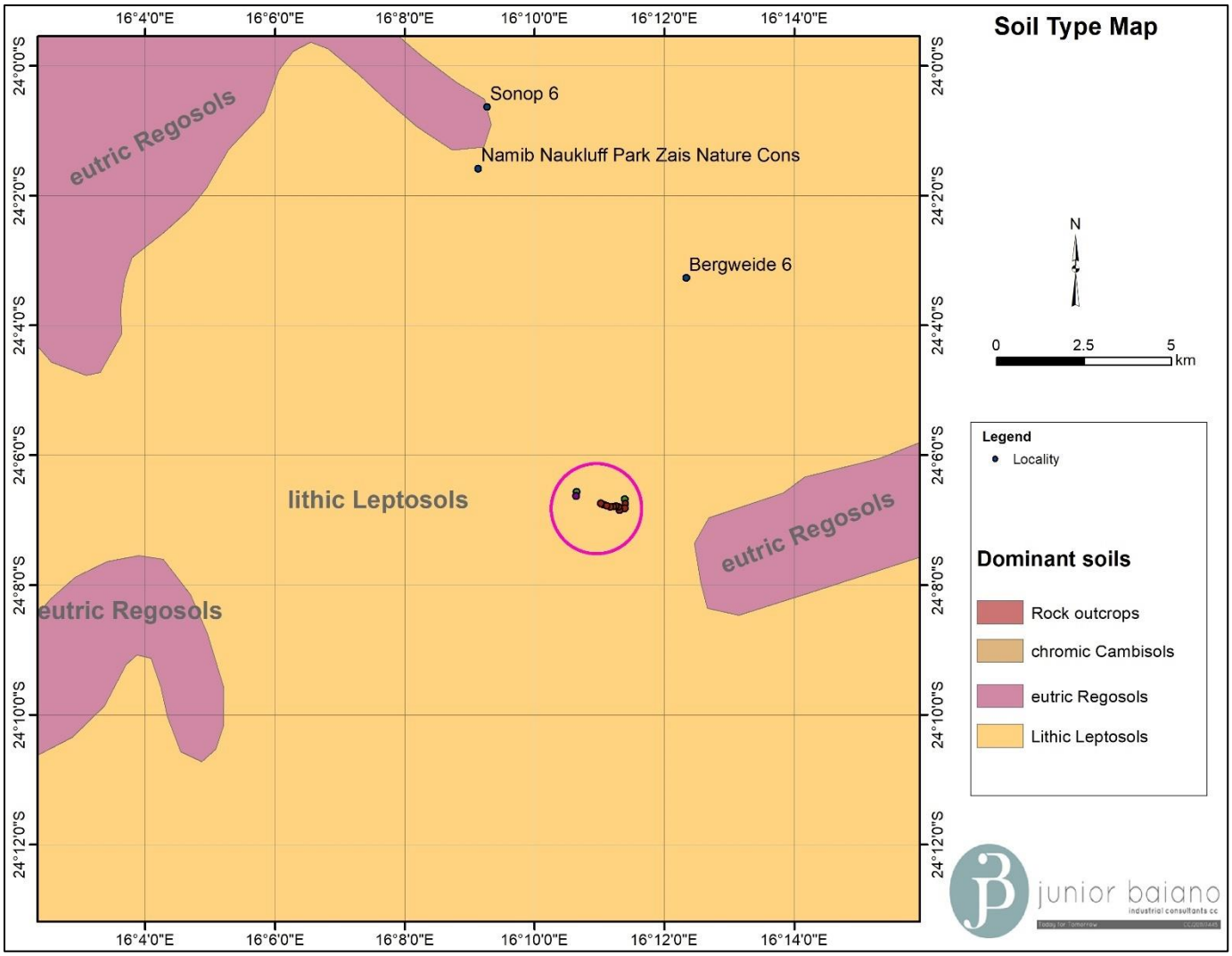


Figure 7: shows the dominant soil types found within the project area

3.4.3 Geohydrology of Maltahohe District:

The hydrology of the Maltahöhe area in Namibia is influenced by its semi-arid climate, geological features, and limited surface water resources. Here are the key aspects of the hydrology in the Maltahöhe region.

Surface Water

Ephemeral Rivers: The region is characterized by ephemeral rivers and streams that flow only during the rainy season, typically from November to April. These rivers are dry for most of the year and only carry water for short periods following heavy rainfall.

Intermittent Pans: Depressions or pans can temporarily hold water after rainfall but often evaporate quickly due to the high temperatures and low humidity.

Groundwater

Aquifers: Groundwater is a crucial water source in the Maltahöhe area. The aquifers are typically found within fractured rocks and alluvial deposits. The availability and quality of groundwater can vary significantly depending on the local geology.

Wells and Boreholes: Many residents and livestock farmers rely on wells and boreholes to access groundwater. The depth and yield of these wells can vary, with some areas having more productive aquifers than others.

Rainfall

Seasonal Variation: The region experiences highly variable and seasonal rainfall, with most of the precipitation occurring during the summer months. Annual rainfall is low, averaging between 200-300 mm.

Rainfall Events: Rainfall events are often intense and localized, leading to rapid runoff and flash floods in ephemeral river channels. This can temporarily recharge local aquifers and fill surface water bodies.

Evaporation

High Evaporation Rates: Due to the hot and dry climate, evaporation rates are high. This results in a significant loss of surface water and reduces the effective recharge of groundwater.

Water Use

Agriculture: Agriculture in the Maltahöhe area is primarily focused on livestock farming due to the limited availability of water for crop irrigation. Water conservation practices are essential for sustainable farming.

Human Consumption: Water for human consumption is sourced from boreholes and wells. Ensuring the quality and sustainability of these water sources is crucial for the local population.

Water Management

Sustainable Practices: Given the scarcity of water, sustainable water management practices are essential. This includes the careful monitoring of groundwater levels, efficient use of available water resources, and the implementation of conservation measures.

Infrastructure: Infrastructure for water storage, such as tanks and reservoirs, is important for capturing and storing rainwater during the wet season for use during the dry months. **Figure 9** below shows the Hydrology of the project area.

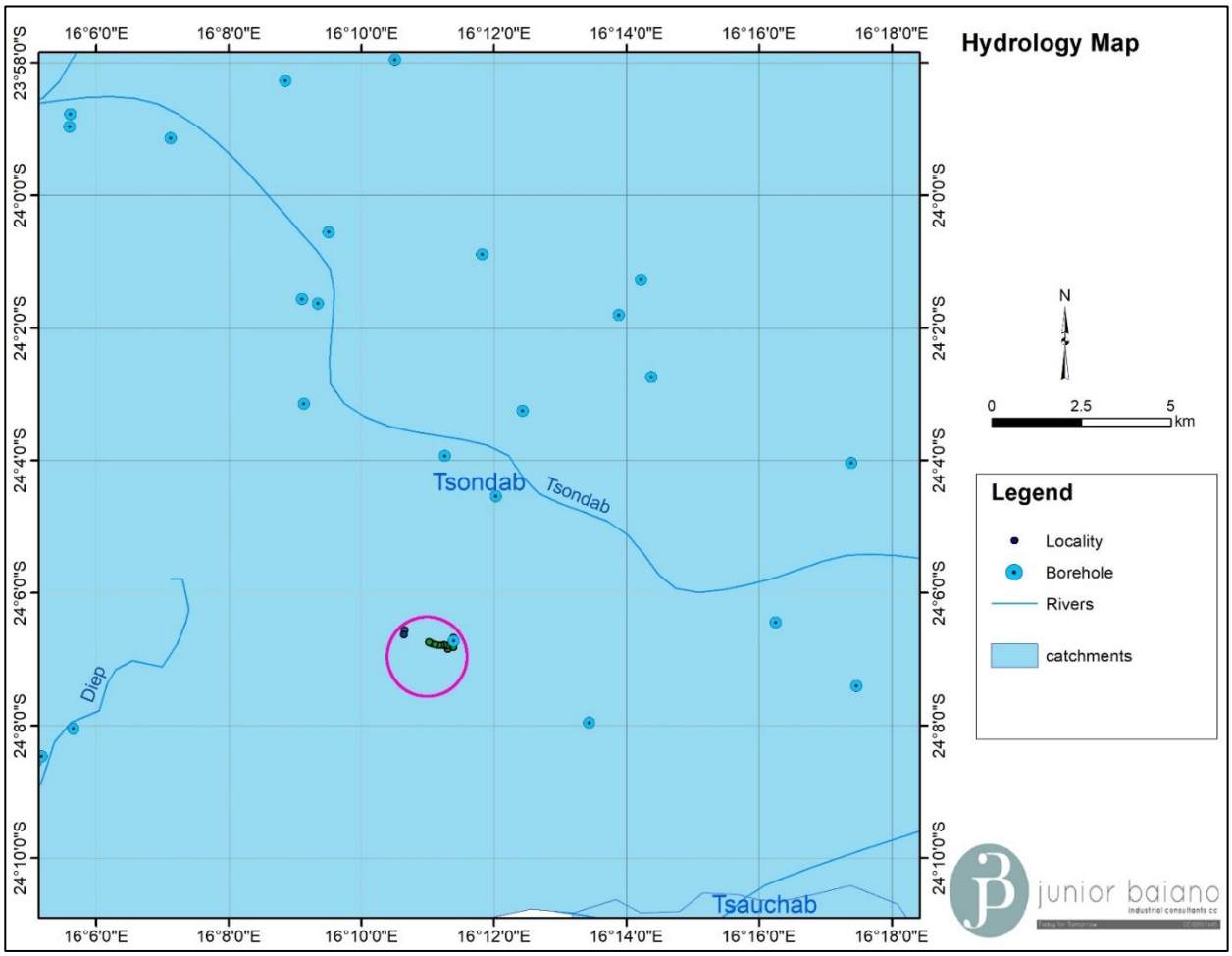


Figure 8: shows the hydrology map of the project area

4 CHAPER FOUR: PUBLIC CONSULTATION

4.1 OVERVIEW

The public consultation process forms an important component of the Environmental Assessment process. It is defined in the EIA Regulations (2012), as a "*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters*" (S1). Section 21 of the Regulations details steps to be

taken during a given public consultation process and these have been used in guiding our process.

Formal public involvement has taken place via public consultations and focal meetings, newspaper announcements to inform the public that such a large-scale project is under consideration. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 21 February 2012.

Its overriding goals have been to ensure transparency in decision making and to.

- ✓ Ensure stakeholder concerns are incorporated in project design and planning;
- ✓ Increase public awareness and understanding of the project and
- ✓ Enhance positive development initiatives through the direct involvement of affected people.

The objectives of the public participation is to build credibility through instilling integrity and of conducting the EIA, Educate the stakeholders on the process to be undertaken and opportunities for their involvement and build stakeholders by establishing an agreed framework accordingly. This requires accessible, fair, transparent and constructive participation at every stage of process. Inform stakeholders on the proposed project and associate issues, impacts and mitigation and using the most effective manner to disseminate information.

In this section of the report, the results of consultations with various classes of stakeholders are summarized. The results of consultations with other stakeholders and community members who took part in this EIA are attached as Appendices.

The consultation was facilitated through the following means:

- ❖ A Background Information Document (BID) containing the project description, the EIA process and an invitation to participate was shared with stakeholders and community members.
- ❖ Invitation to participate notices were published in the local newspapers (Windhoek Observer and Confidante) as shown in the table below and Appendix A of this document.
- ❖ Announcement of EIA process verbally in the common public meeting points see photos in **Figure 10** below.
- ❖ Placement of a public notice at the project site and various parts of the area (see photos below) **figure 9**.

Table 4-1: Details of public notification of the EIA study

Method	Area of Distribution	Language	Date Placed
The Confidante	Country Wide	English	10 & 17 May 2024
Windhoek Observer	Country Wide	English	10 & 17 May 2024
Site notices	Mariental, Maltahohe, Solitaire, Namib Naukluft National Park and nearby farms	English	13 – 20 May 2024
Site Inception meeting	Namib Naukluft National Park	English	14 May 2024
Public Meeting	Rostock Ritz Desert Lodge	English,	21 May 2024

Figure 9: Public notices placed at different places in the, Hardap Region

Figure 10: EIA Public Consultation meetings

- ✓ *Key Stakeholder Engagement Meeting*

A public meeting was organised on 21 May 2024 at Maltahohe Village Council Office and at Rostock Ritz Desert lodge, Solitaire area. Proof of public consultation is given in Appendix A of this document as well the attendance register explaining the project and the EIA study. Given below are the details of the meeting which was held:

- ✓ *Identification of Interested and Affected Parties (I&APs)*

The EIA team identified and consulted the following I&APs & key stakeholders for the proposed project:

- ❖ Local community leadership and regulatory authorities
- ❖ Community Members.

Other I&APs were allowed to register to the EIA team and compiled a database containing their names and correspondence details. The registration was accomplished over a period of 14 days.

- ✓ *Consultation with Stakeholders*

Experts in relevant fields, leaders of thought in environmental matters, local communities have been consulted for their opinions on issues relating to the potential ecological and socio-economic impacts of the proposed project. This provided an opportunity for stakeholders and the public at large to engage in the process and to make comments or express their concerns regarding the proposed development.

Table 4-2: Key findings of the public consultation process

SUMMARY OF ISSUES	
THEME	**ISSUE**
Economic	▪ Employment of general labour must consider employing local people. ▪ The company must take the social responsibility ▪ Improve the life being of the local residents.
Communication	▪ Clear communication needs to be promoted between relevant authorities and the local community. ▪ Clarify nature of new property (how it works, what processes involved).

5 CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1 OVERVIEW

The proponent recognizes the importance of undertaking the project operation in line with sustainable development objectives and applicable legal requirements. To this end an Environmental Management Plan (EMP) for the project is being developed in order to address negative environmental impacts and enhance positive impacts. The EMP takes into account identification of potential impacts, assessment of the significance of the risks associated with these impacts and the establishment of preventive actions as well as mitigation measures. The EMP will be monitored, reviewed, and updated as necessary with the aim of continuous improvement, taking into account various changes in project operations, the biophysical environment and socio-economic circumstances.

5.2 ASSESSMENT OF IMPACTS

This section outlines how the overall methodology to assessing the project's possible environmental and social impacts. Each potential impact must be assessed in order to properly evaluate its significance. The definitions and explanations for each criterion are set out below in Table 5-1.

Table 5-1: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	

Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability	
Low	<25%
Medium	25-75%
High	>75%

(***Adopted from ECC-Namibia, 2017)***

Table 5-2: Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non-reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namibia, 2017)

Table 5-3: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure / Activity
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor	Construction and operational the shuttle service
SOIL	Soil	Contamination to soil from paints and other potentially hazardous substances	Construction and Operations	Moderate	Small	Local	Direct	Low <25%	Minor	Construction and operational
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor	Access Roads construction
	Soil	Erosion	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	Access Roads construction
LAND CAPABILITY	Terrestrial ecology	Change in land use	Construction and Operations	Permanent	Great	Local	Direct	Low <25 – 50 %	Moderate	Shuttle services
	Carrying capacity	Increase in human activities in the environment	Construction and Operations	Moderate	Moderate	Regional	Direct	Low <25%	Minor	Shuttle services
WATER	Surface water quality	Water pollution from oils, lubricants and chemicals spillages.	Construction and Operations	Moderate	Small	Local	Direct	Medium <25 - 50%	Moderate	Construction hydrocarbons and shuttle services
	Surface water quality	Turbidity and high sediment load	Construction	Moderate	Small	Local	Direct	Low <25%	Moderate	Construction hydrocarbons and shuttle services

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure / Activity
AIR QUALITY	Air Quality	Construction phase dust	Construction	Short	Small	Local	Direct	Low <25%	Minor	Access Roads construction and shuttle services during driving
WASTE	Groundwater quality	Hazardous waste such as waste lubricants and stored chemicals may be release into the environment.	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	Access Road construction
	Surface water quality	Threatened from chemicals being washed into nearby rivers	Construction and operations	Moderate	Moderate	Regional	Direct	Medium <25 - 75%	Moderate	Access Roads construction
	Surface water quality	Construction and Operational solid waste	Construction and operations	Moderate	Moderate	Regional	Direct	Medium <25 - 75%	Moderate	Access Roads construction and maintenance
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and driving away of local animals	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	off road driving during shuttle services, and Access Roads construction
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g. road kills; fence and powerline mortalities)	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	off road driving during shuttle services, and Access Roads construction
SOCIAL	Noise Pollution	Increased noise levels	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	off road driving during shuttle services, and Access Roads construction

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure / Activity
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction and operations	Long	Moderate	Regional	Direct	Medium >25 – 75%	Positive	off road driving during shuttle services, and Access Roads construction
	Socio Economic Activities	Climate change impacts	Operations	Long	Moderate	Regional/ National	Direct	High >75%	Positive	off road driving during shuttle services, and Access Roads construction
	Contribution to National Economy	Employment, local procurement, duties and taxes.	Construction and Operations	Short	None	Regional/ National	Direct	Medium >25%-75%	Positive	Tower and Access Roads, off road driving during shuttle services, and Access Roads construction
HERITAGE	Artefacts, archaeological high value components	Destruction or affecting paleontological and archaeological artefacts	Construction and Operation	Moderate	Small	Local	Direct	Low <25%	Minor	off road driving during shuttle services, and Access Roads construction
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities may be detrimental to human health.	Construction	Moderate	Moderate	Local	Direct	Medium <25 – 75%	Moderate	off road driving during shuttle services, and Access Roads construction
	Property and human life	Electrocution, fires resulting in fatalities, damage to properties, fires and power surges.	Construction and Operation	Moderate	Great	Local	Direct	Low <25%	Minor	off road driving during shuttle services, and Access Roads construction

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure / Activity
	Natural Environment	Spillage/ release of chemicals into the environment	Operation	Moderate	Great	Local	Direct	Medium< 25 – 50%	Moderator	off road driving during shuttle services, and Access Roads construction
TRAFFIC	Access road	Vehicular accidents	Construction and Operation	Moderate	Great	Local	Direct	Medium< 25 – 50%	Moderator	Shuttle service, off road driving during shuttle services, and Access Roads construction